



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/681,216 <sup>216-220</sup>	02/27/2001	Venkat Subramaniam Venkataramani	RD-27,679	6997

6147 7590 01/16/2002  
GENERAL ELECTRIC COMPANY  
CRD PATENT DOCKET ROOM 4A59  
P O BOX 8  
BUILDING K 1 SALAMONE  
SCHENECTADY, NY 12301

EXAMINER

PATEL, MAULIN M

ART UNIT	PAPER NUMBER
----------	--------------

3737

DATE MAILED: 01/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/681,218

Applicant(s)

VENKATARAMANI ET AL.

Examiner

Maulin Patel

Art Unit

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 2-27-01.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-24 is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-21 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **Non-Final Rejection**

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 5-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Seyed-Bolorforosh et al. Seyed-Bolorforosh et al., discloses the claimed invention including a method of forming a transducer having impedance matching sub layers that are varied spatially to provide apodization of a radiating aperture (columns 7-8, 15-16, and claim 1).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seyed-Bolorforosh et al., in view of Hanafy et al. . Seyed-Bolorforosh et al., discloses the claimed invention including a method of forming a transducer having impedance matching sub layers that are varied spatially to provide apodization of a radiating aperture (columns 7-8, 15-16, and claim 1). However, Seyed-Bolorforosh et al., does not clearly suggest method of forming each of the sub layers. Hanafy et al., discloses a phased array transducer design and a method of manufacturing acoustic matching layers and sub layers (columns 3, lines 30-46, and claim 6). Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the manufacturing method of Hanafy et al., with the ultrasound probe of Seyed-Bolorforosh et al., in order to accurately image a target structure.

Claims 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanafy et al., in view of Kline-Schoder et al. Hanafy et al., discloses a phased array transducer design and a method of manufacturing acoustic matching layers and sub layers (columns 3, lines 30-46, and claim 6). However, Hanafy et al., does not clearly teach a multilayer transducer array including a thin layer of elements that have impedance values that change from the first sub-layer to the next. Kline-Schoder et al.,

Art Unit: 3737

teaches the use of transducer elements that have a resonance frequency of 500kHz to 300Mhz (claims 1-6 and column 7, line 55). Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the transducer elements of Kline-Schoder et al., to the transducer array of Hanafy et al., in order to image a region of interest.

***Allowable Subject Matter***

Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 22-24 are allowed.

***Conclusion***



The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Smith et al., teaches an ultrasound transducer array with integrated circuitry.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maulin Patel whose telephone number is 703-305-6933. The examiner can normally be reached on Mon - Fri, 8:00-5:00.

Art Unit: 3737

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marvin Lateef can be reached on 703-308-3256. The fax phone numbers for the organization where this application or proceeding is assigned is 703-308-0758.



Maulin Patel  
January 9, 2002



Francis J. Jaworski  
Primary Examiner